

WHAT IS CLAIMED IS:

1. A method for starting an LPI engine in a partial cool-down state comprising the steps of:

receiving a cooling water temperature, a suction air temperature, and a fuel temperature in a fuel line to operate a fuel pump when an ignition key is turned on

5 (input step);

determining that the engine is in a partial cool-down state when the cooling water temperature and the suction air temperature are above a standard levels, and the difference between the said fuel temperature and a fuel temperature of the engine when the engine is turned off is above a standard level (partial cool-down determining step);

10 lighting a lamp for a first predetermined period of time when it is determined that the engine is in a partial cool-down state, such that fuel is not injected into the engine during the first predetermined period of time (a first stand-by step);

selecting an injector inner temperature based upon the suction air temperature, the cooling water temperature and the fuel temperature in the fuel line (injector
15 temperature selecting step);

seeking a target fuel pressure based upon the injector inner temperature to discriminate whether the fuel pressure in the fuel line has reached the target fuel pressure thus obtained (target fuel pressure discriminating step);

maintaining a lighted state of the lamp at the first stand-by stage when the fuel
20 pressure in the fuel line has not reached the target fuel pressure, such that fuel is not injected into the engine (a second stand-by step); and

injecting fuel into the engine to complete the starting of the engine when the

fuel pressure has reached the target fuel pressure or when the second predetermined period of time has elapsed, whichever is earlier (engine starting step).

2. The method as defined in claim 1 further comprising a step of driving the fuel pump at a higher speed than that of a fuel pump necessary for usual engine operation, not for the partial cool-down state, after the engine starting step if the engine was determined to be in a partial cool-down state.

3. A method for starting an LPI engine in a partial cool-down state comprising:
determining whether the engine is in a partial cool-down state;
if the engine is in a partial cool-down state, then

disallowing fuel to be injected for a first determined period of time;

determining an injector inner temperature;

determining a target fuel pressure;

identifying a second predetermined period of time;

injecting fuel into the engine only when the fuel pressure reaches the target fuel pressure or the second predetermined period of time has elapsed, whichever is earlier.